complete bony ankylosis. In five cases it was necessary to do an osteotomy of the femur in order to correct adduction and flexion deformity. Two of the cases recovered with free motion in all directions; two recovered with motion through 45 degrees in flexion. Of the cases treated with Bradford traction-abduction splint no case resulted in bony ankylosis, and in no case was it necessary to correct deformity by osteotomy. All the hips were held in position of abduction.

THERAPEUTICS

UNDER THE CHARGE OF

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An Experimental Study of Methods of Prophylactic Immunization Against Typhoid Fever.—GAY and CLAYPOLE (*Arch. Int. Med.*, 1914, xiv, 67) review the history of the development of artificial immunization against the typhoid bacillus in animals and human beings and discuss some of the many preparations of the typhoid bacillus used for this purpose. Particular attention is drawn to the reputed advantages of living sensitized typhoid vaccine (Besredka) as opposed to other types of vaccine. The many vaccinns that are still being advocated indicate that the best vaccine has not yet been found and that the best method of proving which is the best vaccine has not yet been determined. Sensitized cultures of the typhoid bacillus, whether whole or as sediment, produce little or no reaction in human beings with the possible exception of those who have previously suffered from typhoid or those who have been immunized. By comparing their results with those of certain other observers, the authors conclude that a considerable degree of reaction, both local and general, is avoided by the use of these sensitized cultures, which possess the further advantage, so far as their experimental work can determine, of producing a more durable type of immunity. Gay and Claypole recommend vaccination at short intervals (two days) in human beings, which is rendered quite possible with the mild vaccine they employ, and is evidenced from animal experimentation, as giving rise to less toxic effect and to fully as durable an immunity as vaccination at longer intervals. This type of vaccination has the further advantage of completing the prophylactic treatment of three injections within a week. They further believe that a polyvalent vaccine derived from strains of the typhoid bacillus isolated in the vicinity of patients who are to be treated is advantageous, judging largely from the work of other observers. A further advantage in the use of sensitized cultures is that a polyvalent vaccine, no matter how recently the strains may have been isolated, is also almost entirely free from untoward effect. They recommend for prophylactic immunization against typhoid, three injections of the sediment of a dried, ground, sensitized culture of several local strains of the typhoid bacillus mixed together, given at two-day intervals and in a dosage of $\frac{3}{32}$ mg. of the original dried culture, which corresponds, as has been determined, to a dosage of approximately 750 million living typhoid bacilli. Gay and Claypole state that their experimental and clinical results as well as the work of many other investigators lead them to believe that the agglutinating power of the serum is by no means indicative of the degree of protection afforded against infection with the typhoid bacillus. They believe that the skin test with the typhoidin solution is of far more prognostic value. They state that persons immunized with various types of typhoid vaccines react in the majority of cases for about two years and then become more frequently negative. The authors regard a negative skin test after vaccination as an indication for revaccination.

A Clinical and Bacteriological Study of Hexamethylenamin as a Urinary Antiseptic.—Levy and Strauss (*Arch. Int. Med.*, 1914, xiv, 730), in an endeavor to ascertain the value of hexamethylenamin as a urinary antiseptic, examined the urines from 91 patients receiving this drug. Most of the urines were examined twice and some of them as many as six times. The 91 cases may be divided as follows: surgical 42, medical 32, and genito-urinary 17. The urines of all of the 91 patients gave a test for formaldehyd varying from 1 to 20,000 to 1 to 5000. The urines from 72 patients showed the presence of formaldehyd in the strength of 1 to 10,000. They conclude that in almost all cases hexamethylenamin is excreted into the bladder unaltered and thin, under the influence of the acid in the urine and the warmth of the body, is broken down into formaldehyde. They believe that in those cases in which formaldehyd is liberated in the kidneys it is probably due to the higher than normal acidity of the urine in the kidneys. These are undoubtedly the cases that develop a hematuria or albuminuria. The authors tried the effect of hexamethylenamin in a 10 per cent. neutral solution and found that it had neither bactericidal or inhibitory influences upon bacterial growth. They found that formaldehyd to be of value as a urinary antiseptic must be liberated in strengths varying from 1 to 15,000 to 1 to 5000 depending on the organism the growth of which is to be inhibited. To be of bacteridical value it must be liberated in strengths from 1 to 5000 to 1 to 1000, also depending on the organism. They determined the concentration of formaldehyd in the urines examined by the Rimini method which gives only an approximate estimation. By this method they never demonstrated formaldehyd in a concentration greater than 1 to 5000. Hence they believe it reasonable to assume that formaldehyd is never present in urine in solution strong enough to destroy any organism except the bacillus typhosus. However, it may exert an inhibitory action on other organisms. They found that a high acidity is necessary for the destruction or inhibition of organisms other than the typhoid bacillus. This high acidity in combination with the formaldehyd may produce injury to the kidney tissue. The final conclusion of the authors is that hexamethylenamin appears most efficacious as a prophylactic during the course of typhoid fever for the prevention of pyelitis or cystitis. Its successful use in this connection has been demonstrated both clinically and bacteriologically.